BIOGRAPHICAL SKETCH

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NAME: Rathbun, Colin Michael

eRA COMMONS USER NAME (credential, e.g., agency login): TODO

POSITION TITLE: Postdoctoral Researcher

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (*if applicable*)	Completion Date MM/YYYY	FIELD OF STUDY
Hope College, Holland MI	B.S	05/2012	Chemistry
University of California, Irvine	Ph.D.	05/2018	Organic Chemistry
Colorado University at Boulder	Postdoctoral	Present	Chemical Biology

A. Personal Statement

Methods and tool development have characterized my academic career and continue to inspire my future work. Throughout my undergraduate and graduate work I enjoyed designing solutions to problems in both organic chemistry and chemical biology. My undergraduate research involved development and study of new transition-metal catalyzed reactions involving carbon–carbon bond activation. Under the mentorship of professor Jeffrey Johnson, this work lead to some of the first kinetic characterizations of C–C bond activation reactions. During the summer of 2011 I had the opporunity to conduct research in Buenos Aires, Argentina in the lab of... I continued similar work in organometallic catalysis during the first two years of my graduate education in the lab of Professor Vy Dong. My work in the Dong Lab sought efficient transformations for the synthesis of carbohydrates; a longstanding problem in organic chemistry. Following advancement, I moved to the Prescher lab to pursue the development of new tools for bioluminescence imaging...

1. Rathbun, C. M.*; Porterfield, W. B.*; Jones, K. A.*; Sagoe, M. J.; Reyes, M. R.; Hua, C. T.; Prescher, J. A. “Parallel screening for rapid identification of orthogonal bioluminescent tools.” *ACS Cent. Sci. Accepted*.

2. Chen, I. H.; Kou, K. G. M.; Le, D. N.; Rathbun, C. M.; Dong, V. M. “Recognition and Site-Selective Transformation of Monosaccharides by Using Copper(II) Catalysis.” *Chem. Eur. J.*, **2014**, *20*, 5013.

3. Rathbun, C. M.; Johnson, J. B. “Rhodium-Catalyzed Acylation of Quinolinyl Ketones: Carbon-Carbon Single Bond Activation as the Turnover Limiting Step of Catalysis.” *J. Am. Chem. Soc.*, **2011**, *133*, 2031.

B. Positions and Honors

Positions and Employment

2010–2012	Undergraduate Researcher, Department of Chemistry, Hope College, Holland, MI
2010	Undergraduate Researcher, University of Buenos Aires, Buenos Aires, Argentina
2012–2018	Graduate Researcher, Department of Chemistry, University of California, Irvine

Other Experience and Professional Memberships

2012–	Member, American Chemical Society

Honors

2008	Presidential Scholarship, Hope College, Holland, MI
2009	Jaeker Chemistry Scholarship, Hope College, Holland, MI
2009	Chemistry Dept. J. H. Kleinheksel Award, Hope College, Holland, MI
2011	NSF International REU, Buenos Aires, Argentina
2011	Barry M. Goldwater Scholarship
2012 – 2017	NSF Graduate Research Fellowship
2017 – 2018	Allergan Graduate Fellowship

C. Contribution to Science

1. **Undergraduate Career:** My undergraduate contributions involved

    a. Lutz, J. P.; Rathbun, C. M.; Stevenson, S. M.; Powell, B. M.; Boman, T. S.; Baxter, C. E.; Zona, J. M.; Johnson, J. B. "Rate-Limiting Step of the Rh-Catalyzed Carboacylation of Alkenes: C-C Bond Activation or Migratory Insertion?" *J. Am. Chem. Soc.*, **2012**, *134*, 715.
    b. Rathbun, C. M.; Johnson, J. B. "Rhodium-Catalyzed Acylation of Quinolinyl Ketones: Carbon-Carbon Single Bond Activation as the Turnover Limiting Step of Catalysis." *J. Am. Chem. Soc.*, **2011**, *133*, 2031.

2. **Graduate Career:** My contributions in graduate school..

    a. the one with the mouse unmixing here.
    b. Rathbun, C. M.*; Porterfield, W. B.*; Jones, K. A.*; Sagoe, M. J.; Reyes, M. R.; Hua, C. T.; Prescher, J. A. "Parallel screening for rapid identification of orthogonal bioluminescent tools." *ACS Cent. Sci. Accepted*.
    c. Rathbun, C. M.; Prescher, J. A. "Bioluminescent Probes for Imaging Biology Beyond the Culture Dish." *Biochemistry*, **2017**, *56*, 5178. *Invited review*.
    d. Rathbun, C. M.*; Jones, K. A.*; Porterfield, W. B.*; McCutcheon, D. C.; Paley, M. A.; Prescher, J. A. "Orthogonal Luciferase–-Luciferin Pairs for Bioluminescence Imaging." *J. Am. Chem. Soc.*, **2017**, *139*, 2351.
    e. Steinhardt, R. C.; Rathbun, C. M.; Krull, B. T.; Yu, J. M.; Yang Y.; Nguyen, B. D.; Kwon, J.; McCutcheon, D. C.; Jones, K. A.; Furche, F.; Prescher, J. A. "Brominated Luciferins are Versatile Bioluminescent Probes." *ChemBioChem*, **2016**, *18*, 96.
    f. Steinhardt, R. C.; O'Neill, J. M.; Rathbun, C. M.; McCutcheon, D. C.; Paley, M. A.; Prescher, J. A. "Design and Synthesis of an Alkynyl Luciferin Analogue for Bioluminescence Imaging." *Chem. Eur. J.*, **2016**, *22*, 3671.
    g. Chen, I. H.; Kou, K. G. M.; Le, D. N.; Rathbun, C. M.; Dong, V. M. "Recognition and Site-Selective Transformation of Monosaccharides by Using Copper(II) Catalysis." *Chem. Eur. J.*, **2014**, *20*, 5013.

Complete List of Published Work in MyBibliography:

http://www.ncbi.nlm.nih.gov/myncbi/browse/collection/45972964/

D. Additional Information: Research Support and/or Scholastic Performance

YEAR	COURSE TITLE	GRADE
	HOPE COLLEGE	
2008	Calculus I	TR (AP credit)
2008	Calculus II	TR (AP credit)
2008	Multivariable Mathematics I	A
2009	Multivariable Mathematics II	A
2008	General Chemistry I	A
2009	General Chemistry II	A
2009	General Physics I	A
2009	General Physics II	A
2009	Organic Chemistry I	A
2010	Organic Chemistry II	A
2010	Inorganic Chemistry	A
2010	Inorganic Chemistry Lab	A
2010	Physical Chemistry I	A
2011	Physical Chemistry II	A-
2010	Structure, Dynamics, and Synthesis I	A
2010	Sofware Design & Implementation	A
2011	Data Structures & Sofware Design	A
2011	Statistical Methods	A-
2011	Applied Statistical Models	A
2011	Biochemistry I	A
2011	Analytical Chemistry	A
2012	Advanced Spectroscopy Lab	A
2010–2012	Independent Research in Chemistry	A
	UC IRVINE	
2012	Organic Reaction Mechanisms I	A
2012	Organic Spectroscopy	A-
2012	Organometallic Chemistry	A-
2013	Organic Synthesis I	A-
2013	Chemical Kinetics	A-
2013	Biomacromolecules	A
2014	Chemical Biology	A

Ongoing Research Support

R01 DA942367 Hunt (PI) 09/01/08–08/31/16
Health trajectories and behavioral interventions among older substance abusers
The goal of this study is to compare the effects of two substance abuse interventions on health outcomes in an urban population of older opiate addicts.
Role: PI

R01 MH922731 Merryle (PI) 12/15/07–11/30/15
Physical disability, depression and substance abuse in the elderly
The goal of this study is to identify disability and depression trajectories and demographic factors associated with substance abuse in an independently-living elderly population.
Role: Co-Investigator

Faculty Resources Grant, Washington University 08/15/09–08/14/15 Opiate Addiction Database
The goal of this project is to create an integrated database of demographic, social and biomedical information for homeless opiate abusers in two urban Missouri locations, using a number of state and local data sources.
Role: PI

Completed Research Support

R21 AA998075 Hunt (PI) 01/01/11–12/31/13
Community-based intervention for alcohol abuse
The goal of this project was to assess a community-based strategy for reducing alcohol abuse among older individuals.
Role: PI